— The present application is a continuation of commonly assigned U.S. Patent No. 6,339,595, issued on January 15, 2002, which was filed on December 23, 1997, by Yakov Rekhter and Eric C. Rosen for Peer-Model Support for Virtual Private Networks Having Potentially Overlapping Addresses. —

IN THE CLAIMS:

Please add the following new claims 9-27:

9. (New) A method for use in a router, said method comprising the steps of:

receiving a data packet having a destination address;

determining if said data packet is received from a router in a Virtual Private Network (VPN) or a provider network;

performing, in response to a data packet received from a VPN router:

i. adding a forwarding tag based on said destination address and said VPN and forwarding said data packet to another provider router; and

performing, in response to a data packet having a forwarding tag received from a provider network router:

ii. if said data packet is next being forwarded to another provider router, forwarding said data packet according to said tag to said another provider router; and

iii. if said data packet is next being forwarded to said VPN, removing said forwarding tag from said data packet, and forwarding said packet to said VPN.

10. (New) The method as in claim 9 further comprising the steps of:

receiving reachability messages; and

adding said tag in accordance with the contents of said reachability message.

11. (New) The method as in claim 9 further comprising the step of:

sending to other routers in said provider network a reachability message.

12. (New) The method as in claim 11 further comprising the step of:

using an external gateway protocol for said reachability message.

13. (New) The method as in claim 12 further comprising the step of:

using the Border Gateway Protocol (BGP) for said external gateway protocol.

14. (New) The method as in claim 9 further comprising: using said router as a transit router.

15. (New) The method as in claim 9 further comprising: using said router as a provider edge router.

16. (New) A method for use in a router, said method comprising the steps of:

receiving a data packet from a router;

reading a type field from a header of said packet;

if the type field indicates that the packet has a standard router to router type, then adding a tag and transmitting to a provider router the tagged packet;

if the packet has more than one tag, forwarding the packet to a provider router; and

if the packet has only one tag, forwarding the packet to a customer router.

17. (New) A router, comprising:

an ingress port to receive a data packet originating in a Virtual Private Network (VPN), said packet having a destination address;

circuitry to add a forwarding tag to said data packet, said tag based on said destination address and said VPN, said circuitry responding to data packets received directly from a VPN edge router;

circuitry to remove a forwarding tag from said data packet, said circuitry responding to data packets next being forwarded to a VPN edge router; and

an egress port to forward said data packet according to said tag.

18. (New) The router as in claim 17 further comprising:

an ingress port to receive reachability messages, wherein said forwarding tag is labeled in accordance with said reachability message.

19. (New) The router as in claim 17 further comprising: said router is in a provider network.

20. (New) The router as in claim 19 further comprising:

an egress port to send to other routers in said provider network a reachability message.

21. (New) The router as in claim 20 further comprising: said reachability message uses an external gateway protocol.

22. (New) The router as in claim 21 further comprising: said external gateway protocol is the Border Gateway Protocol (BGP).

23. (New) The router as in claim 17 further comprising: said router is a transit router.

24. (New) The router as in claim 17 further comprising: said router is a provider edge router.

25. (New) A router, comprising:

means for receiving a data packet having a destination address;

means for determining if said data packet is received from a router in a Virtual Private Network (VPN) or a provider network;

means for performing, in response to a data packet received from a VPN router:

i. adding a forwarding tag based on said destination address and said VPN and forwarding said data packet to another provider router; and

means for performing, in response to a data packet having a forwarding tag received from a provider network router:

ii. if said data packet is next being forwarded to another provider router, forwarding said data packet according to said tag to said another provider router; and

iii. if said data packet is next being forwarded to said VPN, removing said forwarding tag from said data packet, and forwarding said packet to said VPN.

26. (New) A computer readable media, comprising: said computer readable media containing instructions for execution in a processor for the practice of the method of claim 1 or claim 16.

27. (New) Electromagnetic signals propagating on a computer network, comprising: said electromagnetic signals carrying instructions for execution on a processor for the practice of the method of claim 1 or claim 16.